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Mellon Institute of Industrial Research

Industrial fellowships

[Pittsburgh?]

1914

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Mellon Institute of Industrial Research
and
School of Specific Industries

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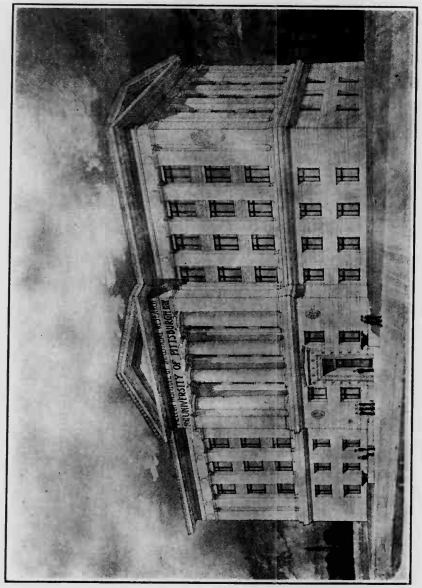
Industrial Fellowships

University of Pittsburgh
1914

Staff

Raymond F. Bacon, Ph. D. ..... Director
E. Ward Tillotson, Ph. D. ..... Assistant Director
Samuel R. Scholes, Ph. D. ..... Assistant Director
John J. O'Connor, Jr., M. A. ..... Assistant Director



NEW BUILDING OF THE MELLON INSTITUTE

Industrial Fellowships
in the
Mellon Institute of Industrial Research

The Mellon Institute, through its Industrial Fellowship system, represents an alliance between industry and learning. On the one hand is industry, with its many unsolved problems of a scientific nature, and on the other hand, the Institute with its knowledge, its wealth of research facilities and its trained men. That the alliance is a happy and successful one, six years of trial have demonstrated. A valuable and permanent relation has been established, the possibilities of which are without limit.

The Institute takes from industrialists perplexing manufacturing problems and, by the application thereto of contemporary science, works out practical commercial solutions to these problems. The results obtained belong to the industrialist who founds the Fellowship.

The idea of Industrial Fellowships was first thought out by Robert Kennedy Duncan, the late Director of the Mellon Institute, while attending the International Congress of Applied Chemistry held in Rome in 1906. Dr. Duncan, on returning from Europe to accept the chair of Industrial Chemistry in the University of Kansas, established there the first Industrial Fellowship in January, 1907.

The scheme was presented to the public by Dr. Duncan in an article entitled "Temporary Industrial Fellowships" in the North American Review for May, 1907, and a little later in the last chapter of his book, "The Chemistry of Commerce."

INTENTIONAL SECOND EXPOSURE

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In September, 1911, the system of Industrial Fellowships was initiated by Dr. Duncan at the University of Pittsburgh in a temporary building erected on the campus. In March, 1913, Messrs. Andrew William and Richard Beatty Mellon, citizens of Pittsburgh, impressed by the evident practical value of the system, both to industry and learning, established it on a permanent basis through the gift of over half a million dollars and consented to allow their family name to be placed upon it as the "Mellon Institute of Industrial Research and School of Specific Industries of the University of Pittsburgh." The gift of the Messrs. Mellon is being used for a permanent building, apparatus, library and a yearly maintenance fund.

At the time of the establishment of the first Fellowship at the University of Kansas, Dr. Duncan was well aware of the fact, which has since become so evident, that much of American industry, from the standpoint of manufacturing efficiency, was in a lamentable condition, and that while American manufacturers were, for the time being, financially successful, a crisis was impending. The efficiency which would come to the rescue of industry was two-sided. First, there would be an efficiency on the part of the employees; and, second, an efficiency which would mean the conservation of waste, the bettering and cheapening of the products manufactured and the discovery of new and useful products to the manufacturers concerned.

The latter phase of efficiency was the one with which Dr. Duncan was concerned, and for its solution he proposed a form of co-operation between industry and learning known as an Industrial

Fellowship. This Fellowship was to be based upon a definite agreement between an industrial concern and a university.

Since the original presentation of this scheme, the agreement upon which it was founded has been discussed and argued back and forth through the offices of so many companies that, while identical in its main provisions with its prototype, in its details it has become modified to correspond with what was learned as the development of the scheme proceeded.

In order to give an idea of the relation of all parties concerned, there is herewith inserted a copy of the agreement now being used by the Mellon Institute.

(Form of Single Fellowship)

.....COMPANY'S FELLOWSHIP AGREEMENT

THIS AGREEMENT, made and entered into this .....day of....., 19....., between the Mellon Institute of the University of Pittsburgh, of the City of Pittsburgh, Pennsylvania, hereinafter called the "Institute," and the....., of ....., ..., hereinafter called the "Company."

WITNESSETH: That for the purpose of promoting the increase of useful knowledge, the parties hereto agree as follows:

1. The Company shall pay to the Institute annually in advance for a period of.....years, beginning ....., 191...., the sum of..... dollars ($.....) for the foundation of an Industrial Fellowship to be known as..... FELLOWSHIP, the exclusive purpose of which is .....

2. The Institute shall accept the sums so to be furnished by the Company and shall devote them to the furtherance of the problem of this Fellowship; and to this end all money received from the Company under this Agreement shall be paid over by the Institute in monthly installments to the holder of this Fellowship,

in such amount as may be agreed upon by the Institute and the Fellow concerned, and expended for such apparatus and supplies related to this research as the Director of the Institute may deem it advisable to purchase and for traveling expenses related to the elucidation of the problem concerned. The Fellow shall be provided, at the expense of the Institute, with a separate laboratory and with such apparatus, supplies and reagents as in the opinion of the Director constitute a reasonable provision. The Company, on its part, shall co-operate with the Institute in this research by providing the Director thereof and the Fellow of this Fellowship with its sympathy and whatever knowledge of the subjects of research it may possess, and, on approval of the Company, with its factory facilities for large-scale experimentation.

3. The holder of the Fellowship provided hereunder shall be appointed by the Committee of Management of the Institute upon the nomination of the Director in accordance with the terms of his formal letter of application to and as approved by the Director, and he shall give his whole time and attention to the object of the Fellowship, with the exception, if the Director so elect, of three hours a week which he shall give to instructional work in the University of Pittsburgh. The Fellow shall work under the advice and direction of the Director and shall from time to time through the Director forward to the Company reports of the progress of his work. During the existence of the Fellowship provided hereunder the Company shall have the right, through and with the acquiescence of the Director, to employ and take into its regular service the Fellow of this Fellowship, upon terms to be agreed upon between the Fellow and the Company.

4. The Institute, at the expiration of the Fellowship, shall return to the Company any money paid to it by the Company, in case any thereof shall remain unexpended for the purpose of this Fellowship.

5. Any and all discoveries made by the Fellow during the term of this Fellowship, as well as all information obtained by him germane to the subjects of his investigation, shall become the property of the Company, subject to the terms and provisions of this Agreement, and the Fellow making such discovery or obtaining such information shall promptly and without demand make revelations of all such information and discoveries. Such revelations shall be made to the duly designated representatives of the Company directly, or through the Director, as the Director may determine.

6. The Fellow of this Fellowship making a discovery or invention germane to the subjects of his investigation shall, at any time, at the option and expense of the Company, apply for letters patent, and shall upon demand assign such letters patent and any and all rights to such invention to the Company under the conditions of this Agreement. In case the Company desires to keep secret such discovery or invention, or for any reason desires that letters patent shall not be applied for, the Fellow shall not at any time apply for patent or patents in his own name, and shall not disclose such discovery or invention to others except as herein provided.

7. The Company shall, in addition to the sum paid to the Institute as foundation for the Fellowship, pay to the Fellow a maximum cash bonus of..... dollars ($.....) or any part thereof which in the opinion of the Board of Arbitration (hereinafter provided for) is deserved by the Fellow of this Fellowship, and the amount of this payment and the time or times of payment shall be decided by the Board of Arbitration upon application of either of the parties hereto.

8. In the event of any difference of opinion between the parties hereto as to the interpretation of this Agreement, or the rights of the respective parties to this Agreement, the matters in issue shall be referred to a Board of Arbitration, which Board shall consist of a representative of the Institute and a representative of the Company, and a third person whom these two shall select. The decision of this Board shall be obtained without recourse to the courts and when rendered shall be binding upon the parties hereto.

9. During the term of this Fellowship, the holder thereof may publish such results of his investigation as do not, in the opinion of the Company, injure its interests. On or before....., 19....., the holder shall have completed a comprehensive monograph on the subjects of his research. The subject matter of such monograph shall not contain specific information of the process or methods of the Company, but it shall be confined to a statement of new discoveries of scientific fact obtained by this Fellowship, and such statement shall not contain data or information in regard to the cost of manufacture by any process revealed in such statement. A copy of this monograph shall be forwarded to the Company and a copy shall be signed and placed in the archives of the Institute until the expiration of three years from the time hereinafter provided for the termination of this Fellowship, when the Institute shall be at liberty to publish it for the use and benefit of the public.

In the event that in the opinion of the Company such publication at such time will unduly injure its interests, it shall have the privilege of appealing at any time for an extension of time of such publication to the Board of Arbitration provided for herein, which after considering the appeal shall, if in its opinion such publication will unduly injure the Company's interests, extend the time of publication to a time when in the Board's opinion publication will not unduly injure the interests of the Company.

10. The Fellowship provided under this Agreement shall terminate the.....day of....., 19.....

IN WITNESS WHEREOF, the parties hereto have caused their names to be subscribed the day and year above mentioned by their duly authorized officers.

MELLON INSTITUTE OF UNIVERSITY OF PITTSBURGH,

By.....

.....

By.....

Witness:

.....

.....

A careful reading of this agreement will make it evident that four different parties are affected:

(1) The Company.
(2) The Fellows.
(3) The University.
(4) The Public.

(1) THE COMPANY.

The Company obtains from the Institute such research laboratory facilities as but exceedingly few industrial concerns possess. Even more important, it obtains complete library facilities which are so valuable in research work. Much time is lost when past and contemporary scientific literature is not available.

The men who are best trained for a particular problem are carefully chosen by the Institute and work under the supervision of a staff experienced

in handling industrial research problems. The Company obtains for a small sum all the advantages of a large organization.

The Institute through its affiliation with the University is able to offer the Company large and important consultative facilities — mathematical, physical, engineering, bacteriological, etcetera.

The Company has an opportunity to obtain for its own organization young men who have had not only thorough scientific training but very special training in the Company's own lines as acquired through its Fellowship.

There is about university work, as differentiated from the factory, freedom from interference, correct judgments concerning progress, and an atmosphere sympathetic to research.

All these advantages, laboratory, library, consultative and inspirational, together with the supervision and administration of these Fellowships, the Institute offers gratuitously to any company having important problems offering a reasonable chance of solution, and it undertakes, as well, to surround these researches with necessary secrecy.

Experience has proved that through this system of Industrial Fellowships a company can do its research work better and cheaper in the Institute than in its own laboratory. Finally it has been found that where there exists a close and sympathetic co-operation on the part of the Company, many seemingly impossible results have been achieved.

(2) THE FELLOWS.

The agreement gives to ambitious young men an opportunity to work out, in a scientific manner,

great industrial problems and not only to work them out in the laboratory but, if the laboratory solution appears to have commercial possibilities, to go further and to try out the methods evolved on a factory scale and, ultimately, to put new processes into industrial operation.

It gives young men a chance to obtain much experience in practical research while they are receiving a satisfactory remuneration. At the same time, they may proceed in the University for advanced academic degrees.

Finally, if the Fellows succeed in a practical way, they receive through their bonus a substantial, practical reward, and often the opportunity to become permanently connected with the Company concerned in the agreement.

(3) THE UNIVERSITY.

The University, under the agreement, fulfills its function in increasing the sum of knowledge; the fact that it is useful knowledge does not make it any less valuable. Furthermore, the right, after a reasonable time, to publish such knowledge is assured to the University. The University also obtains a highly trained staff of specialists, as a faculty, for a School of Chemistry and Chemical Engineering. Then, too, the University undoubtedly feels the stimulating influence of having in its midst a large body of trained investigators doing high-class research work.

(4) THE PUBLIC.

The public is largely advantaged through this system. No discovery can go to the public as a useful actuality of achievement except through some

company. Every useful and significant fact developed by a company is a permanent asset to the human race. Even to-day, if manufacturing waste were eliminated and full advantage were taken of significant contemporary discovery, shorter hours of labor would obtain and human need would vanish.

There are some Fellowships now established in the Institute the results of which will be applied directly to the public welfare. As time goes on there will be an increasing number of such Fellowships.

Since September, 1911, the following Fellowships have been established in the Mellon Institute:

Fellowships marked * have been completed.

I. *BAKING.
$750 a year for 2 years.
Bonus, maximum cash: $2,000.

Fellow:
Wilber A. Hobbs, B.S. (University of Kansas).
(Accepted November 30, 1910.)

II. ABATEMENT OF THE SMOKE NUISANCE.
$12,000 1st year; $15,000 2nd year; $12,000 3rd year.

Fellows:

Staff in Charge.

R. C. Benner, Ph.D. (U. of Wisconsin), Chief Fellow 1st and 2nd years.
J. J. O'Connor, Jr., M. A. (U. of Pittsburgh), Economist and Chief Fellow 3rd year.
W. W. Strong, Ph.D. (Johns Hopkins), Physicist.
A. F. Nesbit, B.S. (Mass. Inst. Tech.), Electrical Engineer.
A. A. Straub, M.E. (Ohio State U.), Mechanical Engineer.
J. A. Beck, LL.B. (U. of Pittsburgh), Attorney.
E. H. McClelland, Ph.B. (Lafayette), Bibliographer.
O. R. McBride, B.S. (Purdue University), Mechanical Engineer.
J. E. W. Wallin, Ph.D. (Yale University), Psychologist.
H. H. Kimball, Ph.D. (George Washington U.), Meteorologist.

A. B. Bellows, B.S. (Mass. Inst. Tech.), Mechanical Engineer.
J. F. Clevenger, M.S. (Ohio State U.), Botanist.
C. H. Marcy, A.B., Bacteriologist.

Advisory Staff.

Oskar Klotz, M.D., C.M. (McGill U.), Senior Fellow.
E. W. Day, A.M., M.D. (Georgetown).
W. C. White, M.D. (Toronto).
R. T. Miller, Jr., M.D. (Johns Hopkins).
W. W. Blair, M.D. (Hahnemann).
B. A. Cohoe, A.B., M.D. (Toronto).
S. R. Haythorn, M.D. (Michigan).
W. L. Holman, M.D. (McGill).
E. B. Lee, Architect, Senior Fellow.
Richard Hooker, B.S., Architect.
C. T. Ingham, Architect.
Richard Kiehnel, Architect.
Carlton Strong, Architect.
K. K. Stevens, B.S., Chemist.
(November 30, 1910; revised June 24, 1911.)

III. * ON THE RELATION OF THE POTS TO GLASS IN GLASS-MAKING AND THE ELIMINATION OF "STREA."
$1,500 a year for 2 years.
Bonus: $2,000.

Fellow:
Samuel R. Scholes, Ph.D. (Yale University).
(January 25, 1911.)

IV. * BAKING. (Wholly independent of but with Acquiescence of Number 1.)
$4,750 a year for 2 years.
Bonus, cash: $10,000.

Fellows:
Henry A. Kohman, Ph.D. (University of Kansas), Senior Fellow.
Charles Hoffman, Ph.D. (Yale University).
Alfred E. Blake, A.B. (New Hampshire College).
(January 25, 1911.)

V. * GLUE.
$1,200 a year for 2 years.

Fellow:
Ralph C. Shuey, B.S. (University of Kansas).
(February 3, 1911.)

VI. * SOAP.
$1,200 a year for 2 years.

Fellow:
Paul R. Parmelee, B.S. (University of Kansas).
(February 3, 1911.)

VII. * UTILIZATION OF FRUIT WASTE.
$1,000 a year for 2 years.
Bonus: $10,000.

Fellow:
F. Alexander McDermott (George Washington U.).
(May 12, 1911.)

VIII. * COMPOSITION FLOORING.
$1,500 a year for 2 years.
Bonus: 1% of sales for 5 years.

Fellow:
R. R. Shively, B.S. (Oklahoma A. & M. College).
(August 15, 1911.)

IX. CRUDE PETROLEUM.
$10,000 1st year; $10,000 2nd year; $10,000 3rd year, including apparatus fund.
Bonus: Collective interest, 10%.

Fellows:
Benjamin T. Brooks, Ph.D. (U. of Göttingen), Senior Fellow.
Clinton W. Clark, M.A. (Ohio State University).
Lester Pratt, M.S. (New Hampshire College).
Hugh Clark, M.A. (Ohio State University).
Arthur H. Myer, A.M. (Leland Stanford, Jr., U.).
Frederick Padgett, B.S. (U. of Pittsburgh).
F. W. Bushong, Sc.D. (Emporia College).
I. W. Humphrey, B.S. (University of Kansas).
George W. Stratton, Ph.D. (Ohio State University).
(September 22, 1911.)

X. NATURAL GAS.
$4,000 1st year; $4,000 2nd year; $6,000 3rd year, including apparatus fund.
Bonus: 5% industrial results.

Fellows:
R. H. Brownlee, Ph.D. (University of Chicago), Senior Fellow.
Roy H. Uhlinger, M.A. (University of Pittsburgh).
(September 22, 1911).

XI. *CEMENT.
$1,800 a year for 2 years.
Bonus: $10,000.
Fellow:
J. F. MacKey, Ph.D. (University of Toronto).
(September 22, 1911.)

XII. FOODS, PROBLEMS RELATED TO THE MANUFACTURE OF.
$5,000 a year for 2 years.
Bonus: $10,000.
Fellows:
Clarence C. Vogt, Ph.D. (Ohio State University), Senior Fellow.
Harry P. Corliss, Ph.D. (U. of Pittsburgh).
Mrs. Lou H. M. Vogt, Ph.D. (Ohio State University).
(May 20, 1912.)

XIII. FATS AND OILS, BLEACHING OF.
$1,500 a year for 2 years + $300 apparatus fund.
Fellow:
Leonard M. Liddle, Ph.D. (Yale University).
(May 22, 1912.)

XIV. EFFECT OF HIGH POTENTIAL ELECTRICITY ON CHEMICAL REACTION.
$1,000 a year for 2 years + $300 apparatus fund.
Additional consideration.
Fellow:
W. E. Vawter, B.S. (University of Kansas).
(October 28, 1912.)

XV. DISCOVERY OF METHODS OF COATING STEEL OR OTHER METALS WITH COPPER OR OTHER METALS.
$1,500 a year for 1 year; $500 apparatus fund; 3 months' extension.
Bonus: $10,000.
Fellow:
C. L. Perkins, B.S. (New Hampshire College).
(December 4, 1912.)

XVI. *EXTRACTION OF COPPER FROM ITS ORES AND FROM COPPER "TAILINGS."
$1,500 a year for 1 year.
Teaching Fellow:
Howard D. Clayton, B.A. (Ohio State University).
(December 1, 1912.)

XVII. DESERT PLANT, AND ADDITIONAL PROBLEM.
$1,500 a year for 1 year; $300 apparatus fund.
Bonus: 7% interest ind. results.
Fellows:
R. R. Shively, Ph.D. (University of Pittsburgh).
Alfred E. Blake, M.S. (University of Pittsburgh).
(January 31, 1913.)

XVIII. BAKING.
$6,000 a year for 2 years; $500 apparatus fund.
Bonus: $10,000.
Fellows:
Henry A. Kohman, Ph.D. (University of Kansas), Senior Fellow.
Charles Hoffman, Ph.D. (Yale University).
Trueman M. Godfrey, B.S. (University of Kansas).
(May 12, 1913.)

XIX. ALUMINUM.
$5,000 a year for 2 years including apparatus fund.
Bonus: $10,000.
Fellows:
Hugh Clark, Ph.D. (U. of Pittsburgh).
Lester A. Pratt, Ph.D. (U. of Pittsburgh).
(May 12, 1913.)

XX. GLUE.
$1,500 a year for 2 years; $300 apparatus fund.
Fellow:
Ralph C. Shuey, B.S. (University of Kansas).
(May 12, 1913.)

XXI. SOAP.
$1,500 a year for 2 years; $300 apparatus fund.
Fellow:
Ben H. Nicolet, Ph.D. (Yale University).
(May 12, 1913.)

XXII. GLASS.
$1,500 a year for 2 years; $300 apparatus fund.
Bonus: $3,500.
Fellow:
R. R. Shively, Ph.D. (University of Pittsburgh).
(July 14, 1913.)

XXIII. RELATION OF ELECTRICAL POTENTIAL TO CATALYTIC ACTION.

$1,500 a year for 2 years; $300 apparatus fund.
Bonus: 5% industrial results.

Fellow:
Frank F. Rupert, Ph.D. (Mass. Inst. Tech.).
(July 14, 1913.)

XXIV. EXTRACTION OF COPPER FROM ITS ORES AND FROM COPPER "TAILINGS."

$1,500 a year for 1 year; $300 apparatus fund.

Fellow:
Charles O. Brown, M.A. (Cornell University).
(July 14, 1913.)

XXV. YEAST.

$5,200 a year for 2 years including apparatus fund.
Bonus: $10,000.

Fellows:
F. Alex. McDermott, B.S. (U. of Pittsburgh), Senior Fellow.
William Smith, Scholar (U. of Pittsburgh).
Ruth Glasgow, M.S. (University of Illinois), Bacteriologist.
James C. Cuthbert, Scholar (U. of Pittsburgh).
(July 14, 1913.)

XXVI. HARDENING OF FATS.

$1,000 a year for 1 year; $300 apparatus fund.
Bonus: 49% interest.

Fellow:
E. O. Rhodes, B.S. (University of Kansas).
(September 19, 1913.)

XXVII. LEATHER SCRAP.

$1,000 a year for 1 year; $200 apparatus fund.
Bonus: 10% interest.

Fellow:
R. Phillips Rose, M.S. (University of Ohio).
(October 22, 1913.)

XXVIII. FERTILIZER.

$2,500 a year for 2 years including apparatus fund.
Bonus: $5,000.

Fellow:
Earl S. Bishop, D.Sc. (Queen's University, Ontario).
(November 1, 1913.)

XXIX. COPPER.

$6,000 a year for 1 year including apparatus fund.

Fellows:
E. R. Weidlein, A.M. (U. of Kansas), Senior.
H. D. Clayton, B.S. (Ohio State University).
G. A. Bragg, B.S. (U. of Kansas).
(November 6, 1913.)

XXX. RADIATORS.

$2,000 a year for 2 years including apparatus fund.
Bonus: $5,000.

Fellow:
J. C. Ballantyne, B.Sc. (University College, London).
(November 18, 1913.)

XXXI. TURBINE ENGINES.

$1,800 a year for 1 year including apparatus fund.
Bonus: $3,000.

Fellow: (Not yet appointed).
(January 5, 1914.)

XXXII. GLASS.

$1,800 a year for 1 year including apparatus fund.
Bonus: 25% interest.

Fellow:
Harvey G. Elledge, B.S. (U. of Kansas).
(January 5, 1914.)

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TITLE